

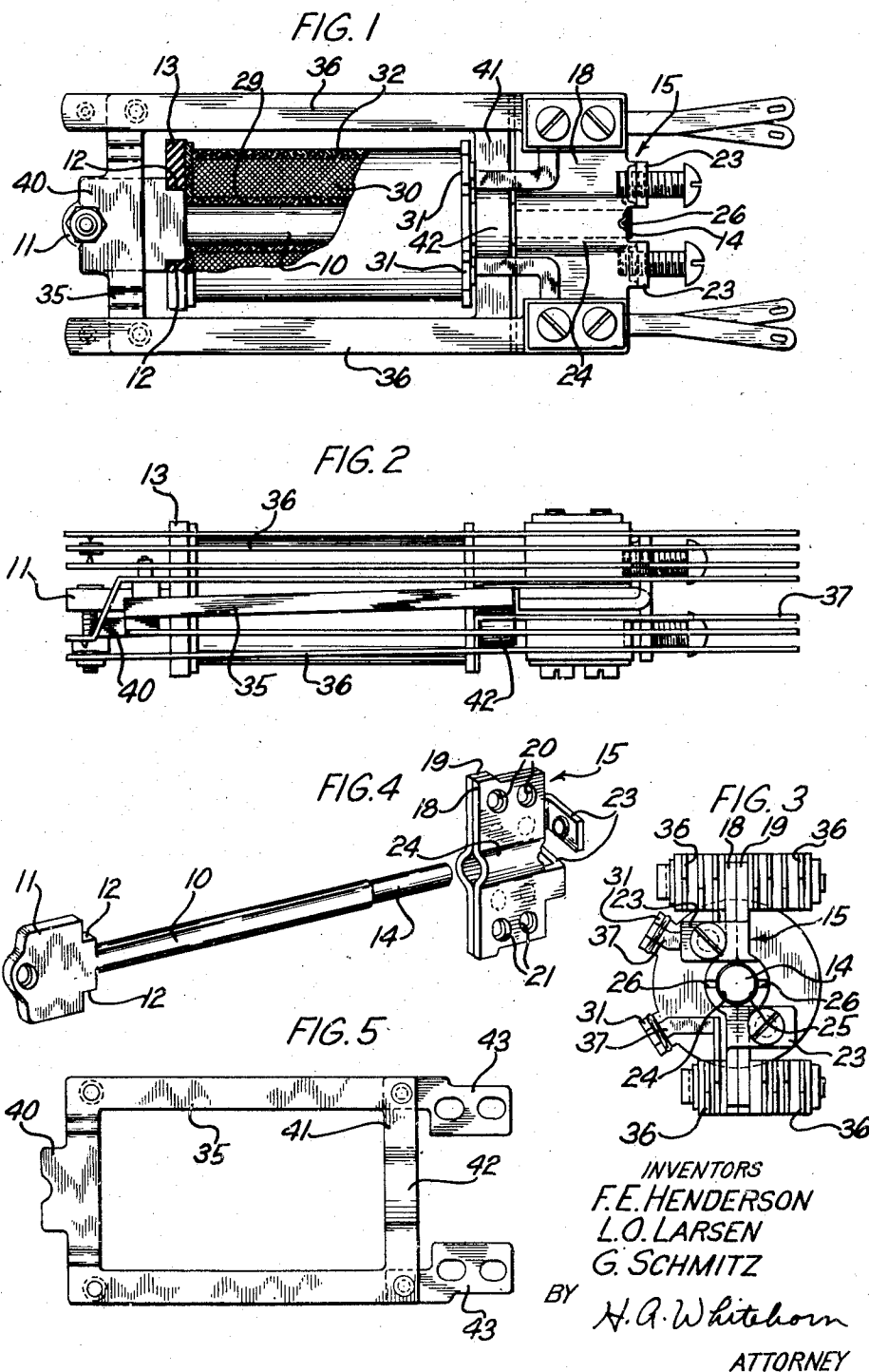
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ELECTROMAGNETIC DEVICE

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ELECTROMAGNETIC DEVICE

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8 Claims. (Cl. 200—104)

This invention relates to electromagnetic devices and more particularly to electromagnetic relays for use in telephone circuits.

Objects of the invention are to provide an efficient and practical electromagnetic device, such as a relay, and a simplified method of assembling it.

In accordance with one embodiment, the invention contemplates a relay having a core with a head formed integral with one end thereof and serving to provide a pole face, the other end having a reduced shank for receiving a head composed of formed members with recessed portions to surround the reduced shank of the core so that the coil may be prewound simultaneously with numerous other coils upon a mandrel and placed upon the core, the composite head being forced onto the reduced shank and secured in place.

Other objects and advantages will be apparent from the following detailed description taken in conjunction with the accompanying drawing, wherein

Fig. 1 is a longitudinal sectional view of a relay embodying the invention, the core and heads being shown in elevation;

Fig. 2 is a side elevational view of the relay;

Fig. 3 is an end elevational view of the relay;

Fig. 4 is a perspective view of the core and detachable head; and

Fig. 5 is a top plan view of the armature.

Referring now to the drawing, wherein like reference numerals designate similar parts throughout the views, numeral 10 designates a core which may be of any desired cross-sectional contour, preferably oval, to prevent relative rotation of a coil when disposed thereupon. The core 10 has an integral head 11 providing a wide flat pole face cooperating with the armature to be described hereinafter. Stepped portions or shoulders 12 are provided between the head and the body of the core for receiving an insulating member 13. The end of the core opposite the head 11 is reduced to form a shank 14 for receiving a head indicated generally at 15. The head 15 comprises a pair of members 18 and 19 formed of flat magnetic material. They are apertured at 20 and 21, for receiving screws for securing other elements thereto, and are provided with lugs 22 and 23, respectively, for the purpose of mounting the relays upon a relay rack or the like. The middle portions of the members 18 and 19 are bent outwardly at 24 and 25, respectively, to form an aperture for receiving the shank 14. The outer edges of the members 18

and 19 have grooves 26 formed therein adjacent the recesses 24 and 25 for use in securing the head to the shank as will be hereinafter described. The securing of the portions 18 and 19 together may be done in any suitable manner such as by welding.

With this type of core construction, a plurality of coils may be wound simultaneously upon a mandrel, after which they may be assembled upon the cores. Such prewound coils will be designated hereinafter as form wound coils. The coil shown in Fig. 1 consists of a spool 29 of insulating material, including insulating heads, upon which is wound a desired number of convolutions of wire 30, the ends of which are wound around and soldered to projections 31 on one of the spool heads. Layers of insulating material 32 cover the convolutions of wire upon the spool. An armature 35, together with the desired arrangement of spring pileups 36 and terminals 37, is mounted upon the head 15. The usual armature stud 38 is mounted upon the head 11 and cooperates with a notch 39 in the pole face 40 of the armature to limit the movement of the armature.

Opposite the pole face 40 is a yoke portion 41 pressed outwardly at 42 in arcuate formation to conform to the core 10 adjacent the shank 14. Resilient spring members 43 are fixed to the armature to serve as means for securing the armature to the head 15 and act as resilient hinges to allow movement of the armature relative to the head.

In assembling the relay the insulator 13 is disposed concentric with the core 10 and forced in a suitable manner upon the stepped portions 12 of the head 11. The coil is then disposed upon the core 10 by sliding it over the shank 14 and over the core until the spool end opposite the one having the projections 31 thereon is positioned adjacent insulating member 13. The head 15 is then forced upon the shank 14 and diametrically opposed portions of the shank at the outer end thereof are upset adjacent the grooves 26 to stake the head 15 in place and against rotation. The spring assemblies 36, the armature 35, and the terminals 37 may then be secured upon the head portion 15 by fastening means passing through the openings 20 and 21 and the inner ends or projections of the terminals 37 soldered to the ends of the wires of the coil at the projections 31. The constructing and assembling of relays in this manner will permit a number of economies in winding and finishing relay coils, as

well as facilitate the assembling and repair of the relay.

While one specific embodiment of the invention has been shown and described, it is to be understood that variations of this structure may be employed within the spirit of the accompanying claims.

What is claimed is:

1. In a relay, a magnetic core having a shank integral at one end thereof, a form wound coil mounted upon said core, a head portion of magnetic material arranged to be disposed upon and secured to said shank, spring contacts and terminals mounted upon said head portion and electrically connected to said coil, and a pole face wider than the core formed integral with the other end thereof.

2. In a relay, a magnetic core having a head portion disposed at one end thereof and a shank disposed at the other end thereof, said head portion having a pole face wider than the core, a form wound coil disposed upon said core, a second head portion of magnetic material having an aperture therein for receiving said shank, and spring contacts and terminals mounted upon said second head portion and electrically connected to said coil.

3. In a relay, a magnetic core arranged to receive a form wound coil and having a head disposed at one end thereof and a shank disposed at the other end thereof, said head portion having a pole face wider than the core, a head portion of magnetic material composed of members secured together and having diametrically opposed grooves forming an aperture for receiving said shank, and contact springs, terminals and an armature secured to said detachable head portion, the terminals being electrically associated with said coil.

4. In a relay, a core having a head portion disposed at one end thereof and a shank disposed at the other end thereof, said head portion having a pole face wider than the core, a form wound coil disposed upon said core, an attachable head composed of members having diametrically opposed recesses forming an aperture for receiving said shank, said attachable head portion being secured in place upon said shank, and spring

contacts, terminals and an armature mounted upon said attachable head portion, the terminals being electrically connected to said coil, and said armature having a pole face disposed adjacent to said pole face of said first mentioned head portion.

5. In a relay, a core having a head portion disposed at one end thereof and a shank disposed at the other end thereof, a form wound coil disposed upon said core, an attachable head composed of members having opposed recesses forming an aperture for receiving said shank, said attachable head portion being secured in place upon said shank, spring contacts, terminals, and an armature mounted upon said attachable head portion, the terminals being electrically connected to said coil, and means carried by the portions of said attachable head for securing the relay to a support.

6. A magnetic core for electromagnetic devices comprising a body portion of magnetic material for receiving a coil, an integral head portion at one end having a pole face wider than said body portion and an attachable head portion of magnetic material at the other end having provision for attaching an armature.

7. In a relay, a magnetic core arranged to receive a form wound coil and having a shank integral at one end thereof and a pole face wider than the core at the other end thereof, a head portion of magnetic material arranged to be clamped upon said shank and an armature secured to said head portion and having a portion extending over and facing said pole face.

8. A core for electromagnetic devices comprising a body portion for receiving a coil and head portion at one end having a pole face wider than said body portion, a shank integral with the other end of said body portion, and an attachable head portion composed of members having diametrically opposed recesses forming an aperture for receiving said shank, and means for securing said attachable head portion on said shank.

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